Social Identity and Socially Shared Retrieval-Induced Forgetting: The Effects of Group Membership

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In a conversation, speakers and listeners will often influence each other's memories, and in doing so, promote the formation of a shared, or collective, memory. One means by which a mnemonic consensus emerges is through socially shared retrieval-induced forgetting (SSRIF). When listeners attend to the speakers' selective retrieval of previously encountered events, they forget unmentioned but related information more than they forget unrelated, unmentioned previously studied information. As a consequence, both speaker and listeners come to remember—and forget—the event in a similar way. SSRIF appears to be dependent on listeners concurrently retrieving the information with the speaker. We asked here whether such concurrent retrieval is a function of group membership, thereby underscoring the connection between a basic mnemonic mechanism—retrieval-induced forgetting—and a social function of communicative interaction—building a shared representation. In Experiment 1, Princeton students listening to a speaker selectively recall previously studied material showed SSRIF when the speaker was identified as a fellow Princeton student, but not when he or she was identified as a Yale student. In Experiment 2, activating a common student identity before the listening task triggered concurrent retrieval in Princeton students when listening to both Princeton and Yale speakers. Thus, similar patterns of selective forgetting are more likely to occur between speakers and listeners if they belong to the same social group. Basic mnemonic mechanisms seem to be adapted to promote the emergence of shared mnemonic representations that preserve group membership and group identity.

Keywords: collective memory, socially shared retrieval-induced forgetting, shared reality, epistemic motivation, relational motivation

This article brings together two strands of research to explore a heretofore unappreciated way social identity can shape memory. The first strand involves recent work on communicative influences on memory (Hirst & Echterhoff, 2012). People often converse with each other about their memories. Americans, for instance, incessantly talked about the attack of September 11 in the weeks following the attack, even though the details of the attack were well known (Mehl & Pennebaker, 2003). This uniquely human endeavor has consequences for the memories of all participants present during recall. Communicative acts of remembering open an opportunity for the person undertaking the remembering (hereafter, the *speaker*) to implant misleading memories in those attending to the remembering (hereafter, *listeners*; Frenda, Nichols, & Loftus, 2011). Moreover, because they are usually selective, these communicative acts of remembering will not only reinforce mentioned memories, but also induce forgetting for unmentioned

ones (Cuc, Koppel, & Hirst, 2007; Roediger, Zaromb, & Butler, 2009). Although memory's susceptibility to these communicative influences might be considered a weakness, in that they lead to unreliable memories, we have argued elsewhere that they have adaptive value (Hirst, Coman, & Coman, 2014; see also Schacter, Guerin, & St. Jacques, 2011). Specifically, inasmuch as communicative influences can affect both speaker and listeners similarly, they can promote the formation of collective memory, something clearly adaptive for creatures as social as humans.

The second strand of research that we build on in this article involves the longstanding observation in social psychology that people are more motivated to relate to those in their in-group than to those in an out-group (Echterhoff, Higgins, & Levine, 2009). We wanted to explore whether such a relational motive could affect the extent to which communicative influences act on memory. If they do, it would indicate that communicative influences are more likely to affect memory if participants in a conversation belong to the same group. To the extent that conversational influences promote the formation of collective memory, a finding along the suggested lines would imply that collective memories should be more likely to form within a group than between groups, a result that would link the microlevel work on conversational influences on memory to the more group-level concerns about collective memory.

In this study, we focused on communication's ability to induce forgetting. As many scholars have noted, the formation of a collective memory is as much about forgetting as it is about

remembering (Coman, Brown, Koppel, & Hirst, 2009). A substantial body of research has shown that selectively recalling previously studied material will induce greater forgetting for unmentioned memories related to the mentioned ones than for unmentioned, unrelated memories. Critically, such *retrieval-induced forgetting* (RIF) is found for both speaker and listener, thereby providing a means of promoting the formation of collective memories through collective forgetting (Hirst, & Echterhoff, 2012; Stone, Coman, Brown, Koppel, & Hirst, 2012). Selective forgetting in the speaker is referred to as *within-individual retrieval-induced forgetting*; in the listener, it is called *socially shared retrieval-induced forgetting* (SSRIF).

SSRIF differs from within-individual retrieval-induced forgetting in that SSRIF is optional. Listeners do not have to concurrently retrieve with a speaker, whereas speakers are, by definition, retrieving the memory just by virtue of communicating it. Inasmuch as people are cognitive misers (Fiske & Taylor, 2013) and retrieval is effortful, the fact that listeners do, in many instances, concurrently retrieve is noteworthy. In some instances, listeners may be motivated to concurrently retrieve for epistemic reasons (Cuc et al., 2007; Koppel, Wohl, Meksin, & Hirst, 2014). *Epistemic motives* refer to the effort to "achieve a valid and reliable understanding of the world" (Echterhoff et al., 2009, p. 500). Our interest here was in relational motives.

According to Echterhoff et al. (2009), *relational motives* "induce people to affiliate and feel connected to others" (p. 500). This motivation to relate can encourage speakers to remember shared past events with others, in that one of the main functions of remembering is social binding (Bluck, Alea, Habermas, & Rubin, 2005). Relational motives could also motivate listeners to concurrently retrieve. If John reminisces with Mary about their first date, the reminiscence is unlikely to achieve the level of social binding it is intended to elicit if Mary, in turn, does not retrieve along with John. It is possible, then, that the more two people want to relate socially with one other, the more likely their social interactions are to elicit concurrent retrieval on the part of the listener and, in turn, produce SSRIF.

In the present study, we explored the role of relational motives in SSRIF by varying group membership. In the reported experiments, listeners were always Princeton students. The speaker was identified as either a Princeton or Yale student. In Experiment 1, we explored whether listening to either a Princeton (in-group) or a Yale (out-group) speaker would affect the degree of SSRIF experienced by the Princeton listener. We reasoned that, when motivated to socially connect with a speaker, as would be the case when the speaker is an in-group member, listeners should be more likely to concurrently retrieve along with the speaker than when they are not motivated to connect, as might be the case when the speaker is an out-group member. To increase the salience of relational motives, we varied the degree to which participants had their Princeton identity active while listening to the speaker.

Experiment 1

In this experiment, Princeton students first learned about an international student exchange program and then listened to an audio recording in which an individual around the age of the prototypical student talked about the program, selectively remembering some of what the Princeton student originally studied. The speaker in the audiotape was identified as either a fellow Princeton or Yale student. Although the Ivy League status of the participants and speaker might be enough to automatically activate an overarching identity on the part of the participant as a Princetonian, we nevertheless included a Princeton identity salience condition, in which we asked individuals to complete a Princeton identification questionnaire before the listening task. A similar procedure was found to increase identification with the specified "in-group" in other contexts (Mackie, Worth, & Asuncion, 1990; Mcgarty, Haslam, Hutchinson, & Turner, 1994).

Method

Participants. Based on the effect size obtained in previous experiments that investigated SSRIF, we calculated that a sample size of at least 30 participants per condition would be sufficient for testing our hypothesis. A total of 128 participants (50% women) took part in the study. Participants were undergraduate students at Princeton University and native English speakers, with an average age of 19.92 years ($SD = 1.30$). Half of the participants completed the Princeton identification questionnaire prior to the listening task; the other half completed the Need for Cognition Questionnaire prior to the listening task. Within each of these groups, half of the participants were told that they were listening to a fellow Princeton student; the other half were told that they were listening to a Yale student.

Stimulus materials. We developed a PowerPoint presentation describing an international student exchange program. It consisted of an introductory slide, which contained general information about the program, followed by four additional slides. Each slide consisted of a "category" label, with four "exemplars" listed immediately below, describing what a student would experience as part of the program. The categories were courses, dining experiences, day trips, and museum exhibitions. For the courses category, for instance, the exemplars were French literature, French music, French cinema, and French politics. Each exemplar comprised a title, a brief description, and the activity that the exchange students would participate in as part of the program. The Oriental rug exhibition in the exhibition category, for example, was described as an exquisite exhibition showcasing rare Persian rugs and involving a lesson of rug weaving with an Iranian instructor. The material on the slides was the same for all participants, but the order in which the slides were presented was counterbalanced.

To create the conditions for RIF, we recorded audiotapes in which the speaker talked about his or her experiences. The speaker offered a redacted version of the original material, discussing half of the exemplars from half of the categories from the original material. The format was that of a podcast in which one student was being interviewed about his or her participation in the student exchange program. The interviewer asked about a general category ("Tell me about the museum exhibitions that the program visited") and the speaker responded. As for the speaker, in her responses to the question, she described, for instance, how she liked the exhibit of Persian rugs and enjoyed the weaving lesson at the Oriental rug exhibition. Although she talked about her own experience, she referred to the Oriental rug exhibition; hence, her discussion was treated as a mention of this exemplar. The selective retrieval of the speaker created three types of items: items from the original PowerPoint presentation mentioned by the speaker (Rp+ items,

e.g., the Oriental rug exhibition), items from the original material that went unmentioned, but were related to those mentioned (Rp− items, e.g., the ancient ceramics exhibition), and items that went unmentioned and were unrelated to the mentioned items (Nrp items, e.g., the items in the day trips or courses categories). To counterbalance which exemplars served as Rp+, Rp−, and Nrp items, we made a total of four recordings with a female speaker. We preceded each recording with an introduction presenting the student as being either a Princeton or a Yale student. We replicated all of these recordings with a male speaker, which produced a total of 16 recordings. We used both female and male speakers to control for the gender of the speaker (Barber & Mather, 2012). Each participant listened to one gender-matched recording, which lasted an average of 244 s (*SD* = 15). The male interviewer was the same in all recordings.

The Princeton identity questionnaire was a six-item questionnaire meant to facilitate the activation of our participants' Princeton identity (Leach et al., 2008). The questions asked participants to indicate how much they identified with being a Princeton student. For example, one item asked participants to indicate how much they agreed or disagreed with the following statement: "Successes of my fellow Princeton students are my successes."

Design and procedure. After being told that they would be learning about a student exchange program and would be asked about the program at the end of the experiment, the participants began the study phase of the experiment, in which they were shown the PowerPoint presentation, with each slide appearing for 45 s. To ensure that participants paid attention to the presented information, the experimenter asked them to indicate in a booklet the degree to which they would enjoy being part of the activity described under each exemplar.

Immediately after the PowerPoint presentation, for the Princeton identity salience condition, participants were asked to fill out the Princeton identity questionnaire. They were given 2 min to do so. For the no identity salience condition, the participants completed a short version of the Need for Cognition Questionnaire for a similar amount of time. The selective practice phase then began. Participants were asked to listen to an audio recording of another student describing the experience he or she had during the exchange program. Participants were told that the recording was from an

interview with a student who had attended the exchange program and who was recalling his or her experiences when prompted by the interviewer's questions. As part of the interviewer's introduction, the identity of the student in the audiotape was revealed. Half of the participants in both salience conditions were told that the person being interviewed in the audiotape was a fellow Princeton student (in-group condition), and the other half, a Yale student (out-group condition). The affiliation with the university, year of study, residential college, and a favorite pastime were mentioned. A picture of the speaker was shown to participants as they listened to the audiotape.

A final recall test followed a 7-min distractor task. Participants were given the category names, one at a time, and were asked to recall as much as they could from each category. The order of the categories in the study phase, whether the speaker in the recording was male or female, and the items that were practiced were counterbalanced. The gender of the participant and the gender of the speaker in the audio were always the same.

Results

Ten percent of the cued-recall data was double coded, with interrater reliability greater than .85 for all the conditions. The coding employed a binary method: An item was counted as either remembered or not remembered. For an item to be counted as remembered, it had to contain at least one of the following features: title, description, or experience. Accounting for less than 1% of the data, cross-category errors were not counted as remembered. In what follows, we collapsed across gender inasmuch as we found no impact of gender on the results.

We were mainly interested in whether participants concurrently retrieved the information along with the speakers, as evidenced in the degree of the SSRIF effect. For the sake of completion, we include the data for Rp+ items in Figure 1. A significant retrieval **F1** practice effect (Rp+ > Nrp) was found in all conditions. (In all instances, *p* < .05.) For SSRIF to occur, the items from unmentioned categories (Nrp items) should be remembered better than items related to those mentioned by the speaker (Rp− items). If SSRIF depends on the listeners concurrently retrieving the information with the speakers, and this in turn depends on the presence
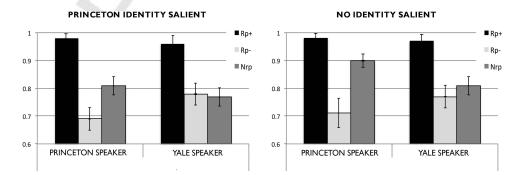

Figure 1. Experiment 1 recall proportion for Rp+/Rp−/Nrp items by identity salience manipulation (Princeton identity salient vs. no identity salient) and speaker's group membership (Princeton vs. Yale). Error bars represent standard errors. Rp+ = item mentioned by the speaker; Rp− = items unmentioned by the speaker that were related to the mentioned items; Nrp = items unmentioned by the speaker that were unrelated to the mentioned items.

of relational motives, then we should observe robust SSRIF when listeners are attending to the Princeton student, but not when they are attending to the Yale student. As suggested above, we were uncertain whether the simple presence in a laboratory on Princeton University's campus would trigger group identification from the part of the Princeton students. As a result, the question as to whether the Princeton identity salience condition would enhance the level of SSRIF, as compared with the no identity salience condition, was exploratory.

With these expectations in mind, we conducted a repeated measures analysis of variance (ANOVA) with retrieval type (Nrp vs. Rp−) as a within-subject variable and speaker's group membership (Princeton vs. Yale) and identity salience (Princeton identity salience vs. no identity salience) as between-subjects variables. We found a main effect for retrieval type, $F(1, 124) = 10.93$, $p < .001$, $\eta_p^2 = .08$, but no main effect for the speaker's group membership, $F(1, 124) = .09$, $p = .77$, $\eta_p^2 = .00$, or identity salience, $F(1, 124) = 1.79$, $p = .18$, $\eta_p^2 = .01$. We did, however, find a significant interaction between retrieval type and group membership, $F(1, 124) = 7.97$, $p < .006$, $\eta_p^2 = .06$. No significant interaction between retrieval type and identity salience, $F(1, 124) = 1.25$, $p = .26$, $\eta_p^2 = .01$, and no three-way interaction between retrieval type, the speaker's group membership, and identity salience, $F(1, 124) = 0.05$, $p = .82$, $\eta_p^2 = .00$, were found.

To explore the interaction between retrieval type and group membership, we undertook a series of post hoc analyses. In the Princeton identity salience condition, we found that listening to a Princeton speaker resulted in an SSRIF effect, $t(31) = 2.73$, $p < .01$, $d = 0.49$, CI [−0.21, −0.03], whereas listening to a Yale speaker did not, $t(31) = 0.20$, $p = .84$, $d = 0.04$, CI [0.11, −0.09] (see Figure 1, left panel). Similarly, in the no identity salience condition, we found that listening to a Princeton speaker resulted in an SSRIF effect, $t(31) = 3.14$, $p < .01$, $d = 0.55$, CI [−0.31, −0.07], whereas listening to a Yale speaker did not, $t(31) = 0.76$, $p = .45$, $d = 0.04$, CI [0.06, −0.13] (see Figure 1, right panel).

These results suggest that relational motives matter to a listener when deciding whether to make the effort to concurrently retrieve. The mere mention of the university membership was enough to elicit SSRIF if the listener (participant) and the speaker (audio) shared the same university. SSRIF was not found when the listener and speaker were not from the same university, that is, when listeners treated the speaker as an out-group member. This effect was not qualified by whether the participants' identities were made salient, perhaps because the Princeton identity was strong in the first place.

Experiment 2

Is it possible to minimize the salience of university membership and find SSRIF regardless of whether the speaker was identified as a Yale or a Princeton student? Experimental manipulations have successfully diminished or even eliminated implicit prejudice (e.g., Dasgupta & Greenwald, 2001). One means of deemphasizing differences in-group membership is to emphasize a commonality across groups. In this experiment, we attempted to do just this by administering a student identity salience questionnaire before participants listened to the speaker's selective presentation. Although university membership may be automatically triggered in many

conditions, as we observed in Experiment 1, it may be less likely to be activated if what is stressed is one's status as a student. In Experiment 2, then, we compared performance when there was a student saliency prime with performance when there was no prime. The latter condition allowed university affiliation to once again come into play.

Method

Participants. A total of 96 participants took part in the study. Sixty-four participants (all the participants in the student identity salient condition) took part in the study in the Spring 2014 semester, and 32 participants (all participants in the no identity salient condition) took part in the study during the Fall 2014 semester. For both conditions, participants were recruited through the Princeton University research participants' pool. They were all undergraduate students at the university and native English speakers, with an average age of 19.89 years ($SD = 1.26$) in the student identity salient condition and 19.69 years ($SD = 1.12$) in the no identity salient condition. In each condition, 50% of participants were women.

Stimulus materials. We used the same stimulus materials as in Experiment 1, except now we developed a student identity salience questionnaire, similar to the Princeton salience questionnaire. It consisted of six items, which emphasized the participant's status as a student. For example, it asked, "The fact that I am a student is an important part of my identity."

Design and procedure. The procedure was similar to the one used in Experiment 1, with some differences. Before listening to the audio of the Yale speaker, participants were asked either to complete the student identity questionnaire (student identity salient condition) or simply to proceed without filling out the questionnaire (no identity salient condition). In addition to these two conditions, we had the Princeton participants in the student saliency condition listen to the audio when the speaker was identified as a Princeton student. In this instance, we tested whether the activation of a student identity would preserve the SSRIF effect observed in Experiment 1, even though Experiment 1 did not explicitly activate student identity.

Results

Coding for 10% of the data was performed by two coders, with interrater reliability greater than .85 for the different conditions. We focus here on the presence of SSRIF, which we expected to find when participants listened to Princeton and Yale speakers in the student identity salient condition. We did not expect to find it for the Yale speaker when participants' identity as a student was not made salient.

To investigate the effect of identity salience on listening to a Yale student, we ran a repeated measures ANOVA with retrieval type (Nrp vs. Rp−) as a within-subject variable and identity salience (student identity salient vs. no identity salient) as a between-subjects variable. There was no main effect for retrieval type, $F(1, 62) = 2.69$, $p = .11$, $\eta_p^2 = .04$, but there was an interaction between retrieval type and identity salience, $F(1, 62) = 4.23$, $p < .05$, $\eta_p^2 = .06$. Paired-sample t tests revealed that listening to a Yale speaker resulted in a significant SSRIF effect in the student identity salient condition, $t(31) = 2.19$, $p < .04$, $d =$

0.39, CI [−0.20, 0.01], but not in the no identity salient condition, $t(31) = 0.39$, $p = .71$, $d = 0.06$, CI [−0.05, 0.07]. Consistent with our hypothesis, listening to a Princeton speaker in the student identity salient condition resulted in a significant SSRIF effect, $t(31) = 3.14$, $p < .05$, $d = 0.36$, CI [−0.21, 0.00] (see Figure 2). This pattern of results confirms that activating an overarching identity between the speaker and the listener makes specific university membership less relevant. Regardless of the university affiliation of the speaker, listeners will want to relate to the speaker and, in doing so, increase the likelihood of concurrent retrieval and SSRIF. The results also replicate our findings in Experiment 1, according to which SSRIF was eliminated when listening to a Yale student when no identity was made salient, and provide further support that relational motivations trigger SSRIF.

General Discussion

This study is the first to show that collective forgetting arising from selective remembering is more likely to emerge when speaker and listeners share group membership. Previous research has established that the motivation to form a valid representation of the world (epistemic motives) influences the degree to which listeners concurrently retrieve along with the speaker (Cuc et al., 2007; Koppel et al., 2014). In demonstrating an effect of group membership, the present research establishes that relational motives fundamentally affect social remembering. Thus, when speaker and listeners are members of the same group, the listener achieves the goal to affiliate and feel connected by concurrently remembering along with the speaker. The common group membership held by speaker and listener might not activate social identity per se, but might make what the speaker says more relevant to the listener. This relevance, rather than the shared social identity itself, may be what motivates concurrent retrieval (Eitam & Higgins, 2010). But whether the social identity of speaker and listener activates a mental representation of their respective identities, or increases the relevance of what the speaker
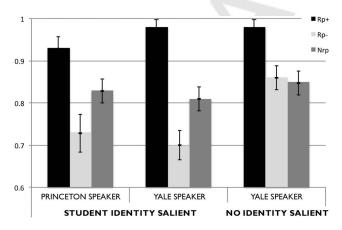

Figure 2. Experiment 2 recall proportion for Rp+/Rp−/Nrp items by speaker's group membership (Princeton vs. Yale) with either a student identity salience manipulation or with no identity salience. Error bars represent standard errors. Rp+ = item mentioned by the speaker; Rp− = items unmentioned by the speaker that were related to the mentioned items; Nrp = items unmentioned by the speaker that were unrelated to the mentioned items.

says, the results clearly show a tight connection between group membership and subsequent SSRIF.

This tight connection underscores the role that communication plays in the formation of collective memory and highlights the adaptive value of RIF. As several researchers have shown, collaborative remembering and the associated SSRIF can lead to collective forgetting, which, in turn, can promote the formation of a collective memory (Choi, Blumen, Congleton, & Rajaram, 2014; Congleton & Rajaram, 2014; Stone, Barnier, Sutton, & Hirst, 2010). Although policymakers often strive to forge collective memories across social groups, it is often difficult to do so, in part because group membership and the collective memories held by a group are often tenaciously preserved (Hogg, 2012). The present work underscores how basic mechanisms of memory, such as RIF, might serve in reinforcing the collective memory held within a group (see also Echterhoff et al., 2009). We view this as adaptive because group identity, and the collective memories held by a group, may be a reasonable way of functioning for individuals as social as humans.

We should caution that SSRIF is not inevitable when group membership is both shared and salient. In a study aimed at exploring the mechanisms by which moral disengagement strategies affect social remembering, Coman, Stone, Castano, and Hirst (2014) examined American listeners attending to American speakers' accounts of atrocities in which previously studied justifications went unmentioned. They found SSRIF for the justifications when the perpetrators of the atrocities were Iraqis. They did not find SSRIF when the perpetrators were Americans. They argued that in the latter instance the need to justify the atrocities committed by their fellow Americans motivated the American participants to covertly fill in the missing justifications during the listening task. That is, listeners went beyond what the speaker mentioned (the atrocities) and retrieved the related and unmentioned information (justifications for atrocities), even though both speaker and listeners belonged to the same social group (American).

Viewed in the context of the present study, this result suggests that listeners will make the effort to concurrently retrieve along with the speaker, and thereby demonstrate SSRIF, when listeners want to relate or socially connect with the speaker. Listeners will make the additional effort to retrieve what the speaker leaves out if the rendering of previously studied material offered by the speaker threatens the listeners' social identity. Listeners in the present study did not make the additional effort that Coman and colleagues' (2014) participants made because there was nothing the speaker said about the student exchange program that threatened the listeners' social identity as a Princeton student. In both instances, the end result was a memory that no doubt strengthened the social identity of the participants—in the present instance, through collective forgetting; in the case of Coman et al., by bringing to mind justifications for identity-threatening atrocities.

Along with other studies on SSRIF, the present findings have important implications for the formation of shared mnemonic representations. Social scientists have often emphasized community homogeneity and the mobilization of shared identities as critical factors that facilitate the formation of collective memories (Smith, 2009). The present study sheds light on the psychologically grounded microprocesses by which conversational remembering leads to increased mnemonic convergence. The motivation to affiliate and feel connected with members of one's group is

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basic to humans. The present results underscore that this basic motive constitutes one means through which conversational remembering synchronizes the speaker's and listeners' memories. And when seen at a social network level, these repeated dyadic interactions constitute, we have shown elsewhere, an important way by which communities of individuals form collective memories (Coman, Momennejad, Drach, & Geana, 2015).

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